

REMARKS

In the Office Action dated September 26, 2007, the Examiner alleges that claim 62 does not meet the tests of 35 U.S.C. § 112, 6th paragraph; objects to the specification because of an alleged informality; rejects claims 1-3, 5, 6, 11-13, 15, 17-19, 21, 26, 27, 30, 32-34, 41, 45, 46, 52, 55, and 60-62 under 35 U.S.C. § 112, 2nd paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention; rejects claims 1, 11-17, 26-32, and 41-44 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,160,627 to Ahn et al. (hereinafter "AHN"); rejects claims 52-59, 61, and 62 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,157,461 to Page (hereinafter "PAGE"); and rejects claims 2-10, 18-25, 33-40, 45-51, and 60 under 35 U.S.C. § 103(a) as allegedly being unpatentable over AHN in view of PAGE. Applicant respectfully traverses these rejections.

By way of the present amendment, Applicants amend the specification to improve form and amend claim 27 to improve form. No new matter has been added by way of the present amendment. Claims 1-62 remain pending in the present application.

Regarding the Examiner's Note on Page 2 of the Office Action:

The Examiner alleged that claim 62 does not meet the tests of 35 U.S.C. § 112, 6th paragraph. Applicants respectfully disagree with this allegation.

More specifically, the Examiner alleged that the means cited in claim 62 appears to be computer program modules and that allegedly no other specific limitations are disclosed in the

specification (Office Action, p. 2). Applicants submit that the specification discloses sufficient structure for achieving the specified function of the means recited in claim 62.

Claim 62 is directed to a system for controlling a path length in a quantum cryptographic key distribution (QKD) system, that includes means for determining probabilities associated with a plurality of detection events, the plurality of detection events being associated with a sequence of symbols received over a path in the QKD system, and means for controlling a length of the path based on the determined probabilities. The features of claim 62 are described, for example, on p. 23, line 18 to p. 25, line 3 of the specification.

Page 25, lines 1-3 of the specification disclose:

In one implementation, joint probability table 1400 may be stored in memory 510 of a QKD endpoint 405. Alternatively, joint probability table 1400 may also be stored in a database external to a QKD endpoint 405.

This section of the specification discloses that one structure that can implement the means of claim 62 is the memory component 510 of Fig. 5. Therefore, sufficient structure is disclosed in the specification for achieving the specified function of the means of claim 62.

For at least the foregoing reasons, Applicants respectfully request that the Examiner invoke 35 U.S.C. § 112, 6th paragraph when considering claim 62.

Objection to the Specification:

The specification stands objected to because of an alleged informality. Applicants respectfully traverse this objection.

The Examiner objected to the specification because of a missing serial number associated with a related application. Applicants have amended the specification to address the Examiner's concern.

For at least the foregoing reasons, Applicants respectfully request that the objection to the specification be withdrawn.

Rejection under 35 U.S.C. § 112, 2nd paragraph:

Claims 1-3, 5, 6, 11-13, 15, 17-19, 21, 26, 27, 30, 32-34, 41, 45, 46, 52, 55, and 60-62 stand rejected under 35 U.S.C. § 112, 2nd paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants respectfully traverse this rejection.

With regard to claims 1, 2, 5, 6, 11-13, 15, 17-19, 21, 26, 27, 30, 32-34, 41, 45, 46, 52, 55, and 60-62, the Examiner alleged that it is indefinite whether the feature “QKD path” and “length of QKD path” refers to the physical path of the expected fiber optic transmission medium or the directed travel distance of light determined by the incident angle of light projected (Office Action, p. 3).

The Examiner’s allegation that it is indefinite what type of path is being referred to in the above claims is directed to the breadth of the claims, and not to the indefiniteness of the claims. The Examiner seems to imply indefiniteness because of the allegation that the term “QKD path” could refer to two different meanings. However, the physical path of any expected fiber optic transmission medium is part of the path traveled by the light along the QKD path. One of the meanings the Examiner is referring to (physical path of the expected fiber optic medium) is a subcategory of the other meaning (directed travel distance of light). Therefore, this is an issue of breadth and not indefiniteness. It is black letter patent law that the breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). See also

M.P.E.P. § 2173.04. Additionally, a fundamental principle contained in 35 U.S.C. §112, second paragraph, is that Applicants are their own lexicographers and may "define in the claims what they regard as their invention essentially in whatever terms they choose as long as any special meaning assigned to a term is clearly set forth in the specification." M.P.E.P. § 2173.01. Applicants respectfully submit that the features of the claims at issue have been broadly defined, as clearly permitted under 35 U.S.C. §112, second paragraph.

Fig. 15 of the present application depicts an example of a QKD path as defined by the specification. Paragraph [0073] of the specification further sets forth the meaning of "QKD path" by disclosing:

FIG. 15 illustrates an exemplary path length diagram that shows the path, that includes an optical fiber 1505, a photon pulse may take between a QKD source 705 of a transmitting QKD endpoint 405a (i.e., Alice) before being detected by one or both of detectors D0 855 and D1 865 at a receiving QKD endpoint 405b (i.e., Bob). In the exemplary phase path length diagram of FIG. 15, the transmitting QKD endpoint's 405a phase modulator 620 (not shown) includes a first interferometer 720 and the receiving QKD endpoint's 405b photon detector 625 (not shown) includes a second interferometer 830.

Thus, Applicants submit that the meaning of the term "QKD path" is clearly set forth in the specification.

For at least the foregoing reasons, Applicants respectfully request that the Examiner's objection to claims 1, 2, 5, 6, 11-13, 15, 17-19, 21, 26, 27, 30, 32-34, 41, 45, 46, 52, 55, and 60-62 be reconsidered and withdrawn.

With regard to claims 1-3, 11-13, 15, 17-19, 27, 30, 32-34, 41, 45, 46, 52, and 60-62, the Examiner alleged that the features "training symbols" and "a sequence of symbols" are indefinite as to whether they are related to timing pulses/information or some other form of information (Office Action, p. 3).

Applicants submit that The Examiner's allegation that it is indefinite what the training symbols or sequence of symbols are related to in the above claims is directed to the breadth of the claims, and not to the indefiniteness of the claims. Applicants respectfully submit that the features of the claims at issue have been broadly defined, as clearly permitted under 35 U.S.C. §112, second paragraph.

For at least the foregoing reasons, Applicants respectfully request that the Examiner's objection to claims 1-3, 11-13, 15, 17-19, 27, 30, 32-34, 41, 45, 46, 52, and 60-62 be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103:

Claims 1, 11, 12, 13-17, 26-32, and 41-44 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over AHN. Applicants respectfully traverse this rejection.

Claim 1 is directed to a method of controlling path length in a quantum cryptographic key distribution (QKD) system that includes receiving training symbols transmitted from a QKD transmitter over a QKD path, and controlling a length of the QKD path based on the received training symbols. AHN does not disclose or suggest this combination of features.

The Examiner admits that AHN does not disclose or suggest this combination of features (Office Action, p. 4). However, the Examiner relies on col. 3, lines 6-8 and col. 3, line 20 of AHN for allegedly disclosing "FIG. 1 illustrates a stabilized optical fiber Mach-Zehnder interferometer in which a transmission wavelength is controlled according to the present invention" and "for varying the length of the optical fiber" (Office Action, p. 4). Applicants submit that the Examiner's allegation does not address the features of claim 1.

Col. 3, lines 6-33 of AHN disclose:

FIG. 1 illustrates a stabilized optical fiber Mach-Zehnder interferometer in which a transmission wavelength is controlled according to the present invention.

The optical fiber Mach-Zehnder interferometer filter according to the present invention includes a 1.3 μm wavelength turnable laser diode (TLD) 10 (or DFB-LD(Distributed Feedback laser diode)) for implementing a stabilization of an interferometer, first and second 3 dB optical fiber couplers 20 and 50 having a 50% coupling ratio at 1.5 μm wavelength band for forming a Mach-Zehnder interferometer, namely, for dividing the intensity of light into two parts, an optical fiber phase modulator(fiber stretcher) 40 connected with two light paths of the interferometer between the first and second optical fiber couplers 20 and 50 for varying the length of the optical fiber, a polarization controller 30 for controlling the polarization of the interfered light, 1.31 μm /1.5 μm wavelength division multiplex optical couplers(WDM coupler) (hereinafter called first and second wavelength division multiplex optical couplers) 60 and 70 connected with the second optical fiber coupler 50 of the interferometer for dividing an optical signal for a filtering and a stabilization light source, and a stabilization circuit 80 for receiving output signals from the first and second wavelength division multiplex optical couplers 60 and 70, obtaining a difference therebetween based on the differential amplifier, integrating the same, feeding-back to the optical fiber phase modulator 40 and obtaining a constant optical path difference of the interferometer.

This section of AHN discloses an optical fiber Mach-Zehnder interferometer in which a transmission wavelength is controlled by an optical fiber phase modulator (fiber stretcher) for controlling the polarization of the interfered light. This section, or any other section, of AHN does not disclose or suggest anything that could even remotely be interpreted as receiving training symbols. This section, or any other section, of AHN also does not disclose or suggest a quantum cryptographic key distribution system. Therefore, this section, or any other section, of AHN cannot disclose or suggest receiving training symbols transmitted from a QKD transmitter over a QKD path, as recited in claim 1. Since AHN does not disclose receiving training symbols transmitted from a QKD transmitter over a QKD path, as recited in claim 1, AHN cannot disclose or suggest controlling a length of a QKD path based on the received training symbols, as also recited in claim 1. Instead, AHN only discloses an optical fiber phase modulator for controlling the length of the optical fiber in accordance with the phase difference between two optical couplers, to thereby obtain

a constant optical path difference between two parts of the optical fiber interferometer (see AHN, col. 4, lines 16-20).

Put another way, in the invention of AHN, the length of the optical fiber is adjusted based on a local reference source (the stabilization source). In contrast, claim 1 recites controlling a length of a QKD path based on received training symbols transmitted from a QKD transmitter.

Therefore, AHN does not disclose or suggest each of the features of claim 1. Furthermore, Applicants submit that the Examiner's motivation to change AHN to include the features of claim 1 does not satisfy the requirements of 35 U.S.C. § 103.

For example, with respect to motivation, the Examiner alleges (final Office Action, pp. 4-5):

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to include "receiving training symbols transmitted from a QKD transmitter over a QKD path", and "controlling a length of the QKD path based on the receiving training symbols," in the invention as disclosed by Ahn et al. since quantum cryptography, which includes quantum cryptographic key distribution, typically has been experimented with and operated using an optical transmission medium (i.e. optical fibers). Thus, the applicant's claim which appears to be directed towards the operation, adjustment/manipulation, and functionality of optical communications would be applicable to any method, system, apparatus, and medium which utilizes a form of optical communications medium (i.e. in this case quantum cryptography since it is typically implemented with an optical communications medium such as fiber optics). That is, the same rules for optical communications would apply regardless the cryptographic methodology.

Applicants submit that the Examiner's allegation is merely a conclusory statement. Such conclusory statements have been repeatedly held to be insufficient for establishing a *prima facie* case of obviousness. In this respect, Applicants rely upon KSR International Co. v. Teleflex Inc., 550 U.S. ____ (April 30, 2007) (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)), where it was held that rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

The Examiner's allegation that since Applicants' method as recited in claim 1 would be applicable to any optical communications medium and that since AHN discloses an optical communications medium, therefore it would be obvious to include the features of claim 1 in the invention of AHN, lacks merit. At best, such an allegation is impermissible hindsight reasoning, trying to read the features of claim 1 into the invention of AHN.

Applicants submit that a proper case of prima facie case of obviousness with respect to claim 1 has not been established. Therefore, claim 1 is patentable over AHN. Accordingly, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Independent claims 11 and 12 recite features similar to, yet possibly of different scope than, features recited above with respect to claim 1. Therefore, these claims are patentable over AHN for at least reasons similar to the reasons set forth above with respect to claim 1. Accordingly, Applicants respectfully request that the rejection of claims 11 and 12 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Independent claim 13 is directed to a method of automatically controlling a path length in a quantum cryptographic key distribution system, the path comprising a first interferometer and a second interferometer. The method includes employing a phase shifting element in the second interferometer, and automatically adjusting the phase shifting element to control the path length based on symbols transmitted over the path. AHN does not disclose or suggest this combination of features.

The Examiner admits that AHN does not disclose or suggest this combination of features (Office Action, pp. 7-8). However, the Examiner relies on col. 3, lines 6-8 and col. 3, line 20 of AHN for allegedly disclosing “an optical fiber phase modulator (fiber stretcher)” and “for varying the length of the optical fiber” (Office Action, p. 4). Applicants submit that the Examiner’s allegation does not address the features of claim 13.

Col. 3, lines 6-20 of AHN is reproduced above. This section of AHN discloses an optical fiber Mach-Zehnder interferometer in which a transmission wavelength is controlled by an optical fiber phase modulator (fiber stretcher) for controlling the polarization of the interfered light. This section, or any other section, of AHN does not disclose or suggest a second interferometer. Therefore, this section, or any other section, of AHN cannot disclose or suggest employing a phase shifting element in a second interferometer, as recited in claim 13. This section, or any other section, of AHN also does not disclose or suggest automatically adjusting a phase shifting element to control the path length based on symbols transmitted over a path (where the path comprises a first interferometer and a second interferometer), as also recited in claim 13.

With regard to motivation, The Examiner made the same allegations as those made with regard to claim 1 (Office Action, p. 8). Therefore, Applicants submit that the Examiner’s motivation with regard to claim 13 suffers from the same deficiencies as those set forth above with respect to claim 1.

For at least the foregoing reasons, Applicants submit that a proper case of prima facie case of obviousness with respect to claim 13 has not been established. Therefore, claim 13 is patentable

over AHN. Accordingly, Applicants respectfully request that the rejection of claim 13 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Claims 14-17 depend from claim 13. Therefore, these claims are patentable over AHN for at least the reasons set forth above with respect to claim 13. Accordingly, Applicants respectfully request that the rejection of claims 14-17 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn. Moreover, these claims are patentable over AHN for reasons of their own.

For example, claim 17 recites adjusting a voltage applied to a phase modulator based on the symbols transmitted over the path. The Examiner relies on col. 3, lines 17-19 of AHN for allegedly disclosing this feature (Office Action, p. 10).

Col. 3, lines 17-19 of AHN is reproduced above. This section of AHN discloses an optical fiber phase modulator (a fiber stretcher). This section of AHN does not disclose or suggest adjusting a voltage applied to a phase modulator based on the symbols transmitted over the path, as recited in claim 17.

For at least these additional reasons, Applicants submit that claim 17 is patentable over AHN.

Independent claim 26 recites features similar to, yet possibly of different scope than, features recited above with respect to claim 13. Therefore, these claims are patentable over AHN for at least reasons similar to the reasons set forth above with respect to claim 13. Accordingly, Applicants respectfully request that the rejection of claim 26 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Amended independent claim 27 is directed to a method of automatically controlling a path length in a quantum cryptographic key distribution (QKD) system. The method includes employing a feedback system in the QKD system, where the QKD system comprises a first interferometer and a second interferometer, and automatically controlling the path length, using the feedback system, based on symbols transmitted over the path from the first interferometer to the second interferometer. AHN does not disclose or suggest this combination of features.

For example, AHN does not disclose or suggest employing a feedback system in the QKD system, where the QKD system comprises a first interferometer and a second interferometer, and automatically controlling the path length, using the feedback system, based on symbols transmitted over the path from the first interferometer to the second interferometer, as recited in amended claim 27. The Examiner admits that AHN does not disclose or suggest the combination of features recited in original claim 27 (Office Action, pp. 11-12). However, the Examiner relies on col. 3, lines 31-32 and col. 3, line 20 of AHN for allegedly disclosing “feeding-back to the optical fiber phase modulator” and “for varying the length of the optical fiber” (Office Action, p. 12). Applicants submit that the Examiner’s allegation does not address the features of amended claim 27.

Col. 3, lines 6-33 of AHN were reproduced above. This section of AHN discloses an optical fiber Mach-Zehnder interferometer in which a transmission wavelength is controlled by an optical fiber phase modulator (fiber stretcher) for controlling the polarization of the interfered light. This section, or any other section, of AHN does not disclose or suggest a QKD system comprising a first interferometer and a second interferometer. Therefore, this section, or any other section, of AHN cannot disclose or suggest employing a feedback system in the QKD system, where the QKD

system comprises a first interferometer and a second interferometer, and automatically controlling the path length, using the feedback system, based on symbols transmitted over the path from the first interferometer to the second interferometer, as recited in amended claim 27.

With regard to motivation, The Examiner made the same allegations as those made with regard to claim 1 (Office Action, p. 12). Therefore, Applicants submit that the Examiner's motivation with regard to claim 27 suffers from the same deficiencies as those set forth above with respect to claim 1.

For at least the foregoing reasons, Applicants submit that a proper case of prima facie case of obviousness with respect to claim 27 has not been established. Therefore, claim 27 is patentable over AHN. Accordingly, Applicants respectfully request that the rejection of claim 27 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Claims 28-32 depend from claim 27. Therefore, these claims are patentable over AHN for at least the reasons set forth above with respect to claim 27. Accordingly, Applicants respectfully request that the rejection of claims 28-32 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Independent claim 41 recites features similar to, yet possibly of different scope than, the features recited above with respect to claim 27. Therefore, these claims are patentable over AHN for at least reasons similar to the reasons set forth above with respect to claim 27. Accordingly, Applicants respectfully request that the rejection of claim 41 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Claims 42-44 depend from claim 41. Therefore, these claims are patentable over AHN for at least the reasons set forth above with respect to claim 41. Accordingly, Applicants respectfully request that the rejection of claims 42-44 under 35 U.S.C. § 103(a) based on AHN be reconsidered and withdrawn.

Claims 52-59, 61 and 62 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over PAGE. Applicants respectfully traverse this rejection.

Independent claim 52 is directed to a method of controlling a path length in a quantum cryptographic key distribution (QKD) system. The method includes determining probabilities associated with a plurality of detection events, the plurality of detection events being associated with a sequence of symbols received over a path in the QKD system and controlling a length of the path based on the determined probabilities. PAGE does not disclose or suggest this combination of features.

The Examiner admits that PAGE does not disclose or suggest any of these features (Office Action, p. 16). However, in rejecting claim 52, the Examiner relies on col. 18, lines 20-24; col. 26, lines 43-46; and col. 17, lines 51-55 of PAGE for allegedly disclosing features that have no relation to the features of claim 52. It is unclear why the Examiner is relying on these sections of PAGE.

For example, col. 18, lines 20-24 of PAGE disclose:

For each discrete Kalman filter "cycle," corresponding to a predetermined filter update rate, an "a priori" mean square estimation error is computed as a function of rate correlation time, previous mean square estimation error computations, and the statistical effects of the previously-described residual noise. The Kalman current measurement "gain" is then computed therefrom which, in turn, is utilized with previous computations to derive an optimal estimate of the central peak modulator voltage in accordance with functional processes well-known in the art.

This section of PAGE discloses a Kalman filter cycle, used to estimate the value of an inaccessible state variable of a system driven by stochastic input disturbances (col. 17, lines 62-65 of PAGE).

This section of PAGE does not disclose determining probabilities associated with a plurality of detection events, the plurality of detection events being associated with a sequence of symbols received over a path in the QKD system and controlling a length of the path based on the determined probabilities, as recited in claim 52.

Col. 26, lines 43-46 of PAGE disclose:

The rate sensor further includes detection circuit means connected to the gyroscope channel for generating an intensity signal indicative at least in part of the resultant fringe patterns. Signal processing means are connected to the detection circuit means and responsive to the intensity signal for generating output signals corresponding at least in part to the rate of angular rotation.

This section of PAGE discloses a rate sensor with a detection circuit connected to a gyroscope channel that appears to have no relation to the features recited in claim 52. Again, this section of PAGE does not even remotely disclose or relate to determining probabilities associated with a plurality of detection events, the plurality of detection events being associated with a sequence of symbols received over a path in the QKD system and controlling a length of the path based on the determined probabilities, as recited in claim 52.

Col. 17, lines 51-55 of PAGE disclose:

For example, a sequential Kalman filter can provide optimal estimates of the true value of the modulator drive voltage corresponding to the central peak of the intensity signal S, even with substantially noisy measurements of this peak location.

This section of PAGE also discloses a Kalman filter, which has no relation to any of the features of claim 52. This section of PAGE does not disclose determining probabilities associated with a plurality of detection events, the plurality of detection events being associated with a sequence of symbols received over a path in the QKD system and controlling a length of the path based on the determined probabilities, as recited in claim 52.

Accordingly, Applicants submit that PAGE does not disclose or suggest each of the features of claim 52. Furthermore, Applicants submit that the Examiner's motivation to change PAGE to include the features of claim 52 does not satisfy the requirements of 35 U.S.C. § 103.

For example, with respect to motivation, the Examiner alleges (final Office Action, pg. 17):

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to include "determining probabilities associated with a plurality of detection events", and "the plurality of detection events being associated with a sequence of symbols received over the path in the QKD system," in the invention as disclosed by Page since quantum cryptography, which includes quantum cryptographic key distribution, typically has been experimented with and operated using an optical transmission medium (i.e. optical fibers). Thus, the applicant's claim which appears to be directed towards the operation, adjustment/manipulation, and functionality of optical communications would be applicable to any method, system, apparatus, and medium which utilizes a form of optical communications medium (i.e. in this case quantum cryptography since it is typically implemented with an optical communications medium such as fiber optics). That is, the same rules for optical communications would apply regardless the cryptographic methodology.

Applicants submit that the Examiner's allegation is merely a conclusory statement. Such conclusory statements have been repeatedly held to be insufficient for establishing a *prima facie* case of obviousness. In this respect, Applicants rely upon KSR International Co. v. Teleflex Inc., 550 U.S. ____ (April 30, 2007) (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)), where it was held that rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

The Examiner's allegation that since Applicants' method as recited in claim 52 would be applicable to any optical communications medium and that since PAGE discloses an optical communications medium, therefore it would be obvious to include the features of claim 52 in the invention of PAGE, lacks merit. At best, such an allegation is impermissible hindsight reasoning, trying to read the features of claim 52 into the invention of PAGE.

Applicants submit that a proper case of prima facie case of obviousness with respect to claim 52 has not been established. Therefore, claim 52 is patentable over PAGE. Accordingly, Applicants respectfully request that the rejection of claim 52 under 35 U.S.C. § 103(a) based on PAGE be reconsidered and withdrawn.

Claims 53-59 depend from claim 52. Therefore, these claims are patentable over PAGE for at least the reasons set forth above with respect to claim 52. Accordingly, Applicants respectfully request that the rejection of claims 53-59 under 35 U.S.C. § 103(a) based on PAGE be reconsidered and withdrawn. Moreover, these claims are patentable over PAGE for reasons of their own.

For example, claim 59 recites that a robust least squares estimation comprises at least one of least absolute residuals and Bisquare weights. PAGE does not disclose or suggest this feature. In rejecting claim 59, the Examiner relies on col. 16, lines 51-54 of PAGE. Applicants disagree with the Examiner's interpretation of PAGE.

Col. 16, lines 51-54 of PAGE disclose:

These detections can be accomplished by means of conventional methods such as "curve fitting" utilizing the principles of "linear least squares" as commonly known in the art.

This section of PAGE discloses curve fitting and linear squares methods. This section of PAGE does not disclose or suggest that a robust least squares estimation comprises at least one of least absolute residuals and Bisquare weights, as recited in claim 59.

For at least these additional reasons, Applicants submit that claim 59 is patentable over PAGE.

Independent claims 61 and 62 recite features similar to, yet possibly of different scope than, features recited above with respect to claim 52. Therefore, these claims are patentable over PAGE

for at least reasons similar to the reasons set forth above with respect to claim 52. Accordingly, Applicants respectfully request that the rejection of claims 61 and 62 under 35 U.S.C. § 103(a) based on PAGE be reconsidered and withdrawn.

Claims 2-10, 18-25, 33-40, 45-51, and 60 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over AHN in view of PAGE. Applicants respectfully traverse this rejection.

Claims 2-10 depend from claim 1. Without acquiescing in the Examiner's rejection, Applicants submit that PAGE does not overcome the deficiencies of AHN set forth above with respect to claim 1. Therefore, claims 2-10 are patentable over AHN and PAGE, whether taken alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claims 2-10 under 35 U.S.C. § 103(a) based on AHN and PAGE be reconsidered and withdrawn.

Claims 18-25 depend from claim 13. Without acquiescing in the Examiner's rejection, Applicants submit that PAGE does not overcome the deficiencies of AHN set forth above with respect to claim 13. Therefore, claims 18-25 are patentable over AHN and PAGE, whether taken alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claims 18-25 under 35 U.S.C. § 103(a) based on AHN and PAGE be reconsidered and withdrawn.

Claims 33-40 depend from claim 27. Without acquiescing in the Examiner's rejection, Applicants submit that PAGE does not overcome the deficiencies of AHN set forth above with respect to claim 27. Therefore, claims 33-40 are patentable over AHN and PAGE, whether taken

alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claims 33-40 under 35 U.S.C. § 103(a) based on AHN and PAGE be reconsidered and withdrawn.

Claims 45-51 depend from claim 41. Without acquiescing in the Examiner's rejection, Applicants submit that PAGE does not overcome the deficiencies of AHN set forth above with respect to claim 41. Therefore, claims 45-51 are patentable over AHN and PAGE, whether taken alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claims 45-51 under 35 U.S.C. § 103(a) based on AHN and PAGE be reconsidered and withdrawn.

Independent claim 60 recites features which are similar, yet possibly of different scope than, features recited above with respect to claim 52. Without acquiescing in the Examiner's rejection, Applicants submit that AHN does not overcome the deficiencies of PAGE set forth above with respect to claim 52. Therefore, claim 60 is patentable over AHN and PAGE, whether taken alone or in any reasonable combination. Accordingly, Applicants respectfully request that the rejection of claim 60 under 35 U.S.C. § 103(a) based on AHN and PAGE be reconsidered and withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of this application, and the timely allowance of the pending claims.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

As Applicants' amendments and remarks with respect to the Examiner's rejections are sufficient to overcome the rejections, Applicants' silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such assertions/requirements in the future.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 18-1945, under Order No. BBNT-P02-097 and please credit any excess fees to such deposit account.

Dated: February 26, 2008

Respectfully submitted,

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